LANDSCAPE REGULATIONS

FOR THE

IMPLEMENTATION OF THE

CITY OF BEVERLY HILLS

WATER EFFICIENT LANDSCAPE ORDINANCE

TABLE OF CONTENTS

1. Purpose and Applicability

1.1 Purpose

(a) The primary purpose of these **Landscape Regulations** is to provide procedural and design guidance for **Project Applicants** proposing installation of **Landscaped Areas, Altered Landscaped Areas** or **Landscaped Area** irrigation systems that are subject to the **Water Efficient Landscape Ordinance.** The **Landscape Regulations** are also intended for use and reference by **City** staff in reviewing and approving designs and verifying compliance with the **Water Efficient Landscape Ordinance**. The general purpose of the **Water Efficient Landscape Ordinance** is to promote the design, installation, and maintenance of landscaping in a manner that conserves regional water resources by ensuring that **Landscaping Projects** are not unduly water-needy and that irrigation systems are appropriately implemented to minimize water waste.

(b) Other regulations affecting landscape design and maintenance practices are potentially applicable and should be consulted for additional requirements. These regulations include, but may not be limited, to:

(1) National Pollutant Discharge Elimination Permit for the Municipal Separate Storm Sewer System;

(2) Beverly Hills Fire Code;

(3) Beverly Hills Zoning Code;

(4) Beverly Hills Building Code;

(5) Specific plans, general plan or other similar land use and planning documents; and

(6) Conditions of approval for a specific project.

1.2 Applicability

(a) The **Water Efficient Landscape Ordinance** and these **Landscape Regulations** apply to all of the following **Landscape Projects**:

(1) **Landscaped Areas** that are more than 2,500 square feet of new residential or commercial development projects, including **City** projects and facilities, whether or not subject to discretionary review.

(2) New installations of Landscape Area irrigation systems.

(3) **Altered Landscaped Areas** where the altered landscaped area is greater than 2,500 square feet and represents at least 50% of the total landscaped area.

(b) The **Water Efficient Landscape Ordinance** and these **Landscape Regulations** do not apply to:

(1) projects which involve alterations or additions to, or retrofits of, existing residential, commercial or public structures or facilities, unless the **Landscape Area** is altered as defined in Section 9-4-403 of the **Water Efficient Landscape Ordinance**;

(2) projects with a **Landscaped Area** of less than two thousand five hundred (2,500) square feet;

(3) landscape that is part of a property listed on any applicable local, state, or federal historical register of historic places; or

(4) plant collections, as part of gardens and arboretums open to the public.

2. Submittal Requirements for New Landscape Area Installations or Altered Landscape Area Projects

2.1 Standard Condition of Approval on a Discretionary Project.

Landscape Projects that are subject to the **Water Efficient Landscape Ordinance** typically involve discretionary approval such that standard or special conditions of approval are imposed on the project. A standard condition of approval may be imposed that reads generally as follows:

"Landscaping for the project shall be designed, implemented and maintained to comply with the **City's Water Efficient Landscape Ordinance** and with the **Landscape Regulations**

2.2 Elements of the Landscape Documentation Package

(a) Prior to issuance of a building permit for any project that involves **Landscaped Areas** or **Altered Landscaped Areas**, the **Project Applicant** must submit a **Landscape Documentation Package** for review and approval by the **Department**. If the Landscaped Area or Altered Landscaped Area is a stand-alone project or does not otherwise require a building permit or formal planning or other commission approval or review, the **Landscape Documentation Package** shall be submitted to the **Department** for review and approval prior to the commencement of landscape improvements. The **Landscape Documentation Package** shall include the documentation set forth in Section 9-4-405 and the following information either on plan sheets or supplemental pages or on a form provided by the **City**:

(1) Project Information, including, but not limited to, the following:

(a) date;

(b) project name;

(c) project address, parcel, and/or lot number(s);

(d) total **Landscaped Area/Altered Landscaped Area** (square feet) as applicable;

(e) project type (e.g., new, altered, public, private, homeowner-installed, irrigation system);

(f) water supply type (e.g., potable, well, etc);

(g) checklist of all documents in the **Landscape Documentation Package**;

(h) project contacts, including contact information for the **Project Applicant** and **Property Owner**;

(i) **Project Applicant**'s signature and date with the statement: "I agree to comply with the requirements of the **Water Efficient Landscape Ordinance** and **Landscape Regulations** and hereby submit a complete **Landscape Documentation Package.**"

(j) any other information the **City** deems relevant for determining whether the project complies with the **Water Efficient Landscape Ordinance** and these **Landscape Regulations**.

(2) **Water Efficient Landscape Worksheet** as described in Section 9-4-410 and attached hereto as Section A forms

(3) A soils management report as described in Section 9-4-409.

(4) Landscape design plan as described in Section 9-4-406.

(5) Irrigation design plan as described in Section 9-4-409.

(6) Grading design plan as described in Section 9-4-408

(7) Payment of a fee as prescribed by the Beverly Hills Fees and Charges Schedule.

2.3 Water Efficient Landscape Calculations and Alternatives

(a) The **Project Applicant** shall complete the **Water Efficient Landscape Worksheet** attached in Section A form which contains a **Hydrozone** information table for the project and Section B forms water budget calculation for the project.

For the calculation of the **Maximum Applied Water Allowance (form B-1)** and

Estimated Total Water Use (form B-2), a **Project Applicant** shall use the ETO value 48.5

(b) The water budget calculations shall adhere to the following requirements:

(1) The **Plant Factor** shall be from **WUCOLS**. The **Plant Factor** ranges from 0 to 0.3 for low water use plants, from 0.4 to 0.6 for moderate water use plants, and from 0.7 to 1.0 for high water use plants.

(2) All water features shall be included in the high water use **Hydrozone** and temporarily irrigated areas shall be included in the low water use **Hydrozone**.

(3) All **Special Landscaped Areas** shall be identified and their water use calculated as described in these **Landscape Regulations**.

(4) **ET adjustment factor** ("ETAF") for **Special Landscape Areas** shall not exceed 1.0.

(c) The **Maximum Applied Water Allowance** shall be calculated using the equation:

MAWA = (ET0)(0.62) [(0.7 x LA) + (0.3 x SLA)]

(d) The **Estimated Total Water Use** shall be calculated using the equation set forth in form B-2 The sum of the **Estimated Total Water Use** calculated for all **Hydrozones** shall not exceed MAWA.

2.4 Soil Management Report

(a) In order to reduce **Runoff** and encourage healthy plant growth, a soil management report shall be completed by the **Project Applicant**, as follows:

(1) Submit soil samples to a certified agronomic soils laboratory for analysis and recommendations.

(a) Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.

(b) The soil analysis may include, but is not limited to:

1. **Soil Texture**;
2. **Infiltration Rate** determined by laboratory test or **Soil Texture** infiltration rate table;
3. pH;

4. total soluble salts;

5. sodium;

6. percent organic matter; and

7. recommendations.

(2) The **Project Applicant** shall comply with one of the following:

(a) if significant mass grading is not planned, the soil analysis report shall be submitted to the **Department** as part of the **Landscape Documentation Package**; or

(b) If significant mass grading is planned, the soil analysis report shall be submitted to the **Department** as part of the **Certification of Completion**.

(3) The soil analysis report shall be made available, in a timely manner, to the professionals preparing the landscape design plans and irrigation design plans in order to make any necessary adjustments to the design plans.

(4) The **Project Applicant** shall submit documentation verifying implementation of soil analysis report recommendations to the **Department** with the Certification of Completion.

2.5 Landscape Design Plan

(a) For the efficient use of water, landscape shall be carefully designed and planned for the intended function of the project. A landscape design plan that meets the following design criteria shall be submitted as part of the **Landscape Documentation Package**.

(1) Plant Material

(a) Any plant may be selected for the **Landscaped Area** or **Altered Landscaped Area** provided the **Estimated Total Water Use** ("ETWU") does not exceed the **Maximum Applied Water Use** ("MAWA"). To encourage the efficient use of water, the following is highly recommended:

1. protection and preservation of non-invasive water-conserving plant species and water-conserving **Turf**;

2. selection of water-conserving plant species and water-conserving **Turf**;

3. selection of plants based on disease and pest resistance;

4. selection of trees based on applicable **City** tree ordinances or tree shading guidelines; and

5. selection of plants from local and regional landscape program plant lists.

(b) Each **Hydrozone** shall have plant materials with similar water use, with the exception of **Hydrozones** with plants of mixed water use, as specified in Section 2.5(a)(2)(d) of these **Landscape Regulations**.

(c) Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended for inclusion in the landscape design plan:

(1) use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate;

(2) recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, and power lines); and

(3) consider the solar orientation for plant placement to maximize summer shade and winter solar gain.

(d) The landscape design plan, at a minimum, shall:

(1) delineate and label each **Hydrozone** by number, letter, or other method;

(2) identify each **Hydrozone** as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscaped area shall be included in the low water use **Hydrozone** for the water budget calculation;

(3) identify recreational areas;

(4) identify areas permanently and solely dedicated to edible plants;

(5) identify areas irrigated with recycled water;

(6) identify type of **Mulch** and application depth;

(7) identify soil amendments, type, and quantity;

(8) identify type and surface area of water features;

(9) identify **Hardscapes (Pervious and Non-Pervious)**;

(10) identify location and installation details of applicable storm water best management practices that encourage on-site retention and infiltration of storm water. Storm water best management practices are encouraged in the landscape design plan and examples include, but are not limited to:

(a) infiltration beds, swales, and basins that allow water to collect and soak into the ground;

(b) constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and

(c) **Pervious** or porous surfaces (e.g., permeable pavers or blocks, **Pervious** or porous concrete, etc.) that minimize **Runoff**.

(11) identify any applicable rain harvesting or catchment technologies (i.e, rain gardens, cisterns, etc.);

(12) contain the following statement: "I have complied with the criteria of the **Water Efficient Landscape Ordinance** and **Landscape Regulations** and applied them for the efficient use of water in the landscape design plan;" and

(13) bear the signature of a California-licensed **Landscape Architect**, licensed **Landscape Contractor** or any other person authorized to design a landscape.

2.6 Irrigation Design Plan

(a) For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturer's recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the **Landscape Documentation Package**.

(1) System

(a) **Smart Irrigation Controllers** or other self-adjusting irrigation controllers, shall be required for all irrigation systems. The controller must be able to accommodate all aspects of the landscape and irrigation design plans.

(b) The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.

1. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.

2. **Static Water Pressure**, dynamic or **Operating Pressure**, and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.

(c) **Sensors** (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.

(d) Manual shut-off **Valves** (such as a gate **Valve**, ball **Valve**, or butterfly **Valve**) shall be required as close as possible to the point of connection of the water supply to minimize water loss in case of an emergency (such as a **Main Line** break) or routine repair.

(e) **Backflow prevention devices** shall be required to protect the water supply from contamination by the irrigation system. The **Project Applicant** shall comply with applicable **City** code for additional backflow prevention requirements.

(f) High flow **Check Valves**, or other technology to interrupt operations in high flow conditions created by irrigation system damage or malfunction shall be required.

(g) The irrigation system shall be designed to prevent **Runoff,** low head drainage, **Overspray,** or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, **Hardscapes**, roadways, or structures.

(h) Relevant information from the soil management plan, such as soil type and **Infiltration Rate,** shall be utilized when designing irrigation systems.

(i) The design of the irrigation system shall conform to the **Hydrozones** of the landscape design plan.

(j) The irrigation system must be designed and installed to meet, at a minimum, the **Irrigation Efficiency** criteria as described in Section 2.3, regarding the **Maximum Applied Water Allowance**.

(k) It is highly recommended that the **Project Applicant** inquire with the **City**'s water department about peak water operating demands (on the water supply system) or water restrictions that may impact the effectiveness of the irrigation system.

(l) In **Mulched** planting areas, the use of **Low Volume Irrigation** is required to maximize water infiltration into the root zone.

(m) **Sprinkler Heads** and other emission devices shall have matched **Precipitation Rates**, unless otherwise directed by the manufacturer's recommendations.

(n) Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.

(o) **Swing joints** or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.

(p) **Check Valves** or **Anti-Drain Valves** are required for all irrigation systems.

(q) Narrow or irregularly shaped areas, including **Turf**, less than eight (8) feet in width in any direction shall be irrigated with subsurface irrigation or a **Low Volume Irrigation** system.

(r) Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Allowable irrigation within the setback from non-permeable surfaces may include drip, drip line, or other low flow non-spray technology. The setback area may be planted or unplanted. The surfacing of the setback may be **Mulch**, gravel, or other porous material. These restrictions may be modified if:

1. the **Landscaped Area** is adjacent to permeable surfacing and no **Runoff** occurs; or

2. the adjacent non-permeable surfaces are designed and constructed to drain entirely to landscaping; or

3. the irrigation designer for the **Landscape Project** specifies an alternative design or technology, as part of the **Landscape Documentation Package**, and clearly demonstrates strict adherence to the irrigation system design criteria in Section 2.6(a)(1)(g). Prevention of **Overspray** and **Runoff** must be confirmed during an **Irrigation Audit**.

4. Slopes greater than 25% shall not be irrigated with an irrigation system with a **Precipitation Rate** exceeding 0.75 inches per

hour. This restriction may be modified if the landscape designer of the **Landscape Project** specifies an alternative design or technology, as part of the **Landscape Documentation Package**, and clearly demonstrates no **Runoff** or erosion will occur. Prevention of **Runoff** and erosion must be confirmed during the **Irrigation Audit**.

(2) Hydrozone

(a) Each **Valve** shall irrigate a **Hydrozone** with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

(b) **Sprinkler head**s and other emission devices shall be selected based on what is appropriate for the plant type within that **Hydrozone**.

(c) Where feasible, trees shall be placed on separate **Valves** from shrubs, groundcovers, and **Turf**.

(d) Individual **Hydrozones** that mix plants of moderate and low water use or moderate and high water use may be allowed if:

1. the **Plant Factor** calculation is based on the proportions of the respective plant water uses and their respective **Plant Factors**; or

2. the **Plant Factor** of the higher water using plant is used for the calculations.

(e) Individual **Hydrozones** that mix high and low water use plants shall not be permitted.

(f) On the landscape design plan and irrigation design plan, **Hydrozone** areas shall be designated by number, letter, or other designation. On the irrigation design plan, designate the areas irrigated by each **Valve** and assign a number to each **Valve**. This **Valve** number shall be used in the **Hydrozone** Information form A worksheet. This table can also assist with the **Irrigation Audit** and programming the controller.

(g) The irrigation design plan, at a minimum, shall contain:

1. the location and size of separate water meters for landscape;

2. the location, type, and size of all components of the irrigation system, including controllers, main and **Lateral Lines, Valves, Sprinkler Heads, Moisture Sensing Devices**, rain switches,

quick couplers, pressure regulators, and **Backflow Prevention Devices;**

3. **Static Water Pressure** at the point of connection to the public water supply;

4. **Flow Rate** (gallons per minute), application rate (inches per hour), and design **Operating Pressure** (pressure per square inch) for each **Station**;

5. irrigation schedule parameters necessary to program smart timers specified in the landscape design;

6. the following statement: "I have complied with the criteria of the **Water Efficient Landscape Ordinance** and the **Landscape Regulations** applied them accordingly for the efficient use of water in the irrigation design plan;" and

7. the signature of a California-licensed **Landscape Architect**, **Certified Irrigation Designer**, licensed **Landscaped Contractor**, or any other person authorized to design an irrigation system.

2.7 Grading Design Plan

(a) For the efficient use of water, grading of a **Landscape Project** site shall be designed to minimize soil erosion, **Runoff**, and water waste. The **Project Applicant** shall submit a grading plan as part of the **Landscape Documentation Package**. A comprehensive grading plan prepared by a civil engineer for the project for other **City** permits, would satisfy this requirement.

(b) The **Project Applicant** shall submit a landscape grading plan that indicates finished configurations and elevations of the **Landscaped Area** including:

(1) height of graded slopes;

(2) drainage patterns;

(3) pad elevations;

(4) finish grade; and

(5) storm water retention improvements, if applicable.

(c) To prevent excessive erosion and **Runoff**, it is highly recommended that the **Project Applicant**:

(1) grade so that all irrigation and normal rainfall remains within property lines and does not drain on to non-permeable **Hardscapes**;

(2) avoid disruption of natural drainage patterns and undisturbed soil; and

(3) avoid soil compaction in **Landscaped Areas**.

(d) The Grading Design Plan shall contain the following statement: "I have complied with the criteria of the **Water Efficient Landscape Ordinance** and **Landscape Regulations** and applied them accordingly for the efficient use of water in the grading design plan" and shall bear the signature of a licensed professional, as required by law.

2.8 Certification of Completion

(a) The installation of the **Landscaped Area** or **Altered Landscaped Area** shall not proceed until the **Landscape Documentation Package** has been approved by the **City** and any ministerial, discretionary or permits required are issued.

(b) The **Project Applicant** shall notify the **City** at the beginning of the installation work and at intervals, as necessary, for the duration of the **Landscape Project** work to schedule all required inspections.

(c) A **Certification of Completion** for a **Landscape Project** shall be obtained in order to obtain a Final Permit approval.

(d) A **Certificate of Completion** shall be on the form attached and shall include the following elements, including those set forth in Section 9-4-411:

(1) A project information sheet that contains the following:

(a) date;

(b) project name;

(c) **Project Applicant** name, telephone and mailing address;

(d) project address and location; and

(e) **Property Owner** name, telephone and mailing address.

(2) Certification by either the signer of the landscape design plan, the signer of the irrigation design plan or the licensed **Landscape Contractor** that the **Landscape Project** has been installed per the approved **Landscape Documentation Package**.

(a) Where there have been significant changes made in the field during construction, these "**as-builts**" or **record drawings** shall be included with the certification

(3) Soils management report, if not submitted with **Landscape Documentation Package**, and documentation verifying implementation of soil report recommendations.

2.9 Post-Installation Irrigation Scheduling

(a) As required by Section 9-4-412, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

(1) Irrigation scheduling shall be regulated by **Smart Irrigation Controllers**.

(2) Overhead irrigation shall be scheduled in accordance with the **City's** Water Conservation Ordinance. Operation of the irrigation system outside the allowable **Watering Window** is allowed for auditing and system maintenance.

(3) For implementation of the irrigation schedule, particular attention must be to irrigation run times, emission device, **Flow Rate,** and current **Reference Evapotranspiration**, so that **Applied Water** meets the **Estimated Total Water Use**. Total annual **Applied Water** shall be less than or equal to **Maximum Applied Water Allowance** ("MAWA") Actual irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data (i.e., CIMIS) or **Soil Moisture Sensor** data.

(4) Parameters used to set the automatic controller shall be developed and submitted for each of the following:

(a) the plant establishment period;

(b) the **Established Landscape**; and

(c) temporarily irrigated areas.

(5) Each irrigation schedule shall consider for each **Station** all of the following that apply:

(a) irrigation interval (days between irrigation);

(b) irrigation run times (hours or minutes per irrigation event to avoid **Runoff**;

(c) number of cycle starts required for each irrigation event to avoid **Runoff**;

(d) amount of **Applied Water** scheduled to be applied on a monthly basis;

(e) application rate setting;

(f) root depth setting;

(g) plant type setting;

(h) soil type;

(i) slope factor setting;

(j) shade factor setting; and

(k) irrigation uniformity or efficiency setting.

2.10 Post-Installation Landscape and Irrigation Maintenance

(a) As required by Section 9-4-413, landscapes shall be maintained to ensure water use efficiency. A regular maintenance schedule shall be submitted with the **Certificate of Completion**.

(b) A regular maintenance schedule shall include, but not be limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching **Turf** areas; replenishing **Mulch**; fertilizing; pruning, weeding in all **Landscape Areas**, and removing any obstruction to emission devices. Operation of the irrigation system outside the allowed **Watering Window** is allowed for auditing and system maintenance.

(c) Repair all irrigation equipment shall be done with the originally installed components or their equivalents.

(d) A **Project Applicant** is encouraged to implement sustainable or environmentally-friendly practices for overall landscape maintenance.

3. Provisions for Existing Landscapes

3.1 Provisions for Irrigation Audits

(a) For new **Landscaped Areas** or **Altered Landscaped Areas** installed after January 1, 2010, the **Project Applicant** shall submit an **Irrigation Audit** report with the **Certificate of Completion** that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting **Overspray** or **Runoff** that causes overland flow, and preparation of an irrigation schedule. All landscape **Irrigation Audits** shall be conducted by a **Certified Landscape Irrigation Auditor**. The **City** may administer programs that may include, but not be limited to, **Irrigation Water Use Analysis, Irrigation Surveys** and/or **Irrigation Audits** for compliance with the **Maximum Applied Water Allowance.**

(b) For all existing landscapes that were installed before January 1, 2010 and are over one acre in size, the following shall apply:

(1) For all landscapes that have a water meter, the **City** may administer programs that may include, but not be limited to, irrigation water uses analyses, **Irrigation Surveys**, and **Irrigation Audits** to evaluate water use and provide recommendations as necessary to reduce landscape water use to a level that does not exceed the **Maximum Applied Water Allowance** for existing landscapes. The **Maximum Applied Water Allowance** for existing landscapes shall be calculated as MAWA = (0.8)(Eto)(LA)(0.62).

(2) For all landscapes that do not have a meter, the **City** may administer programs that may include, but not be limited to, **Irrigation Surveys** and **Irrigation Audits** to evaluate water use and provide recommendations as necessary in order to prevent water waste.

(c) All **Irrigation Audits** shall be conducted by a certified landscape irrigation auditor.

4. Irrigation Efficiency

For the purpose of determining **Irrigation Efficiency** and determining **Maximum Applied Water Allowance**, average **Irrigation Efficiency** is assumed to be 0.71. Irrigation systems shall be designed, maintained and managed to meet or exceed an average landscape **Irrigation Efficiency** of 0.71.

5. Public Education

Education is a critical component to promote the efficient use of water in landscapes. The use of appropriate principles of design, installation, management and maintenance that save water is encouraged in the community. The **City** shall make available information to the public regarding the design, installation, management and maintenance of water efficient landscapes.

6. Effective Precipitation

The **City** may consider **Effective Precipitation** (25% of annual precipitation) in tracking water use and may use the following equation to calculate **Maximum Applied Water**

Allowance; MAWA = (Eto –Eppt)(0.62)[(0.7 x LA) + (0.3 x SLA)].

7. Incentives

A **Project Applicant** that designs landscapes with less than the water budget referenced in the **Water Efficient Landscape Ordinance** and **Landscaped Regulations** shall be entitled to expedited plan check through Planning and Building & Safety.

Appendix A

Definitions

The terms used in these **Landscape Regulations** and the **Water Efficient Landscape Ordinance** have the meaning set forth below:

"**Applied Water**" means the portion of water supplied by the irrigation system to the landscape.

"**Backflow prevention device**" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

"**Certified irrigation designer**" means a person certified to design irrigation systems by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation designer certification program and Irrigations Association's Certified Irrigation Designer program.

"**Certified Landscape Irrigation Auditor**" means a person certified to perform landscape **Irrigation Audits** by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's **Certified Landscape Irrigation Auditor** program.

"**Check Valve**" or "**Anti-Drain Valve**" means a **Valve** located under a **Sprinkler Head**, or other location in the irrigation system, to hold water in the system to prevent drainage from **Sprinkler Heads** when the sprinkler is off.

"**City**" means the City of Beverly Hills.

"**Common Interest Developments**" means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

"Conversion Factor" means the number that converts acre-inches per acre per year to gallons per square foot per year.

"**Drip Irrigation**" means any non-spray **Low Volume Irrigation** system utilizing emission devices with a **Flow Rate** measured in gallons per hour. **Low Volume Irrigation** systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

"**Effective Precipitation**" or "**Usable Rainfall**" (Eppt) means the portion of total precipitation which becomes available for plant growth.

"Emitter" means a **Drip Irrigation** emission device that delivers water slowly from the system to the soil.

"**Established Landscape**" means the point at which plants in the landscape have developed significant roots growth into the soil. Typically, most plants are established after one or two years of growth.

"**Establishment Period of the Plants**" means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

ETWU?

"**Evapotranspiration adjustment factor**" or "**ET Adjustment Factor**" **or** "**ETAF**" means a factor of 0.7, that, when applied to **Reference Evapotranspiration**, adjusts for **Plant Factors** and **Irrigation Efficiency**, two major influences upon the amount of water that needs to be applied to the landscape. A combined plant mix with a site-wide average of 0.5 is the basis of the **Plant Factor** portion of this calculation. For purposes of the ETAF, the average **Irrigation Efficiency** is 0.71. Therefore, the **ET Adjustment Factor** is (0.7)=(0.5/0.71) . **ETAF** for a Special Landscape Area shall not exceed 1.0. **ETAF** for existing non-rehabilitated landscapes is 0.8.

"**Evapotranspiration Rate**" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

"**Flow rate**" means the rate at which water flows through pipes, **Valves** and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

"**Hardscapes**" means any durable material or feature (**Pervious** and **Non-pervious**) installed in or around a **Landscaped Area**, such as pavements or walls. Pools and other water features are considered part of the **Landscaped Area** and not considered **Hardscapes** for purposes of these Guidelines.

"**Hydrozone**" means a portion of the **Landscaped Area** having plants with similar water needs and typically irrigated by one **Valve**/controller **Station**. A **Hydrozone** may be irrigated or non-irrigated.

"**Infiltration Rate**" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

"**Invasive Plant Species**" or noxious means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species.

"**Irrigation Audit**" means an in-depth evaluation of the performance of an irrigation system conducted by a **Certified Landscape Irrigation Auditor**. An **Irrigation Audit** includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting **Overspray** or **Runoff** that causes overland flow, and preparation of an irrigation schedule.

"**Irrigation Efficiency**" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. **Irrigation Efficiency** is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average **Irrigation Efficiency** for purposes of the **Water Efficient Landscape Ordinance** 0.650.71. Greater **Irrigation Efficiency** can be expected from well designed and maintained systems.

"**Irrigation Survey**" means an evaluation of an irrigation system that is less detailed than an **Irrigation Audit**. An **Irrigation Survey** includes, but is not limited to: inspection, system test and written recommendations to improve performance of the irrigation system.

"**Irrigation Water Use Analysis**" means an analysis of water use data based on meter readings and billing data.

"**Landscape Documentation Package**" means the package of documents that a **Project Applicant** is required to submit to the **City** pursuant to Section 9-4-405 of the **Water Efficient Landscape Ordinance** and these **Landscape Regulations**.

"**Landscape Architect**" means a person who holds a license to practice landscape architecture in the state of California Business and Professions Code, Section 5615.

"**Landscape Contractor**" means a person licensed by the State of California to construct, maintain, repaid, install or subcontract the development of landscape systems.

"**Lateral Line**" means the water delivery pipeline that supplies water to the **Emitters** or sprinklers from the **Valve**.

"**Low Volume Irrigation**" means the application of irrigation water at low pressure through a system of tubing or **Lateral Lines** and low-volume **Emitters** such as drip, drip lines, and bubblers. **Low Volume Irrigation** systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

"**Main Line**" means the pressurized pipeline that delivers water from the water source to the Valve or outlet.

"Maximum Applied Water Allowance" (MAWA) means, the upper limit of annual applied water for the Established Landscaped area as specified in Section 492.4. It is based upon the area's Reference Evapotranspiration, the ET Adjustment Factor, and the size of the landscaped area. The Estimated Total Water Use shall not exceed the Maximum Applied Water Allowance. Special Landscape Areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ETAF not to exceed 1.0.

"*Maximum Applied Water Allowance*" **or "*MAWA*" means the upper limit of annual applied water for the** Established Landscaped **area, as specified in Section 2.2 of these *Guidelines*. It is based upon the area's** Reference Evapotranspiration, **the *ETAF*, and the size of the**

landscaped area. **The *Estimated Applied Water Use* shall not exceed the** *Maximum Applied Water Allowance.*

"**Microclimate**" means the climate of a small, specific area that may contrast with the climate of the overall landscaped area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

"**Mulch**" means any organic material such as leaves, bark, straw or compost, or inorganic mineral materials such as rocks, gravel, or decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

"**Non-Pervious**" means any surface or natural material that does not allow for the passage of water through the material and into the underlying soil.

"**Noxious weeds**" means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

"**Operating Pressure**" means the pressure at which the parts of an irrigation system of sprinklers are designed to operate at by the manufacturer

"**Overhead Sprinkler Irrigation Systems**" means systems that deliver water through the air (e.g., spray heads and rotors).

"**Overspray**" means the irrigation water which is delivered beyond the target area.

"**Person**" means any natural person, firm, joint venture, joint stock company, partnership, public or private association, club, company, corporation, business trust, organization, public or private agency, government agency or institution, school district, college, university, any other user of water provided by the City, or the manager, lessee, agent, servant, officer, or employee of any of them or any other entity which is recognized by law as the subject of rights or duties.

"**Pervious**" means any surface or material that allows the passage of water through the material and into the underlying soil.

"**Plant Factor**" or "**Plant Water Use Factor**" is a factor, when multiplied by *ETo*, that estimates the amount of water needed by plants. For purposes of this **Water Efficient Landscape Ordinance,** the **Plant Factor** range for low water use plants is 0 to 0.3; the **Plant Factor** range for moderate water use plants is 0.4 to 0.6; and the **Plant Factor** range for high water use plants is 0.7 to 1.0. **Plant Factors** cited in these **Landscape Regulations** are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species."

"**Precipitation Rate**" means the rate of application of water measured in inches per hour.

"**Property Owner**" or "**Owner**" means the record owner of real property as shown on the most recently issued equalized assessment roll.

"**Rain Sensor**" or "**Rain Sensing Shutoff Device**" means a component which automatically suspends an irrigation event when it rains.

"**Record Drawing**" or "**As-Builts**" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

"**Reference Evapotranspiration**" or "**ETo**" means a standard measurement of environmental parameters which affect the water use of plants. **ETo** is given expressed in inches 48.5 per year and is an estimate of the Evapotranspiration established by the Cities Arborist and is to be used as the basis of determining the **Maximum Applied Water Allowances**.

"**Runoff**" means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscaped area. For example, **Runoff** may result from water that is applied at too great a rate (application rate exceeds Infiltration Rate) or when there is a slope.

"**Special Landscaped Areas**" or "**SLA**" means an area of the landscape dedicated solely to edible plants such as orchards and vegetable gardens, and areas dedicated to active play such as parks, sports fields and where **Turf** provides a playing surface.

"**Soil Moisture Sensing Device**" or "**Soil Moisture Sensor**" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

"**Soil Texture**" means the classification of soil based on its percentage of sand, silt, and clay.

"**Sprinkler head**" means a device which delivers water through a nozzle.

"**Static Water Pressure**" means the pipeline or municipal water supply pressure when water is not flowing.

"**Station**" means an area served by one **Valve** or by a set of **Valves** that operate simultaneously.

"**Swing joint**" means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

"**Turf**" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.

"**Valve**" means a device used to control the flow of water in an irrigation system.

"**Water Efficient Landscape Ordinance**" means Ordinance No. 09-2574 adopted by the City Council on November 17, 2009, and codified in the Municipal Code in Article 4, Chapter 4 of Title 9.

"**Water Efficient Landscape Worksheets**" means the documents required to be completed pursuant to Section 9-4-410 and these **Landscape Regulations** and which are included in these regulations as the cities forms.

"**Water Conserving Plant Species**" means a plant species identified as having a low **Plant Factor**.

"**Water feature**" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of **Water Features** is included in the high water use **Hydrozone** of the **Landscaped Area**. Constructed wetlands used for on-site wastewater treatment, habitat protection, or storm water best management practices that are not irrigated and used solely for water treatment or storm water retention are not **Water Features** and, therefore, are not subject to the water budget calculation.

"**Watering window**" means the time of day irrigation is allowed pursuant to **City's** local ordinance or resolution.

"**WUCOLS**" means the Water Use Classification of Landscape Species List published by the University of California Cooperative Extension, the Department of Water Resources, and the Bureau of Reclamation, 2000 at *www.owue.water.ca.gov/docs/wucols00.*

Forms

Section A - Water Efficient Landscape Worksheet Hydrozone Table

Section B1- Water Budget Calculations MAWA

Section B2 – Water Budget Calculations ETWU

Certificate of Completion – Project information Sheet

Certificate of Installation

DAVID GUSTAVSON, Public Works Director
SUSAN HEALY KEENE, Community Development Director

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455 North Rexford Drive, 1st Floor
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WATER EFFICIENT LANDSCAPE WORKSHEET

ORDINANCE NO. 09 – O – 2574

NOTE: *This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package. Please complete all sections (A and B) of the worksheet.*

SECTION A. HYDROZONE INFORMATION TABLE

Please complete the hydrozone table(s) for each hydrozone. Use as many tables as necessary to provide the square footage of landscape area per hydrozone.

Hydrozone*	Zone or Valve	Irrigation Method**	Area (square feet)	% of Landscape Area
	Total			

Hydrozone*
HW High Water Use Plants
MW Moderate Water Use Plants
LW = Low Water Use Plants

****Irrigation Method**
MS = Micro-spray
S = Spray
R = Rotor
B= Bubbler
D= Drip
O= Other

DAVID GUSTAVSON, Public Works Director
SUSAN HEALY KEENE, Community Development Director

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SECTION B. WATER BUDGET CALCULATIONS

Section B1. Maximum Applied Water Allowance (MAWA)

The project's Maximum Applied Water Allowance shall be calculated using this equation:

$$MAWA = (ETo)(0.62)[(0.7 \times LA) + (0.3 \times SLA)]$$

where:

MAWA = Maximum Applied Water Allowance (gallons per year)

ETo	*= Reference Evapotranspiration (Beverly Hills ETo = 48.5) (inches per year)*	= 48.5
0.7	*= ET Adjustment Factor (ETAF)*	= 0.7
LA	*= Landscaped Area includes Special Landscape Area (square feet)*	=
0.62	*= Conversion factor (to gallons per square foot)*	= 0.62
SLA	*= Portion of the landscape area identified as Special Landscape Area (square feet)*	=
0.3	*= The additional ET Adjustment Factor for Special Landscape Area (1.0 - 0.7= 0.3)*	= 0.3

Maximum Applied Water Allowance = _____ gallons per year

Show calculations.

Effective Precipitation (Eppt)

If considering Effective Precipitation, use 25% of annual precipitation. Use the following equation to calculate Maximum Applied Water Allowance:

$$MAWA = (ETo - Eppt)(0.62)[(0.7 \times LA) + (0.3 \times SLA)]$$

Maximum Applied Water Allowance = _____ gallons per year

Show calculations.

DAVID GUSTAVSON, Public Works Director
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Section B2. Estimated Total Water Use (ETWU)

The project's Estimated Total Water Use is calculated using the following formula:

ETWU (ETo)(O.62)(((PF x HA)/IE) + SLA)

where:

ETWU = ***Estimated total water use per year (gallons per year)***
ETo = ***Reference Evapotranspiration (inches per year)***
PF = ***Plant Factor from WUCOLS (see Definitions)***
HA = ***Hydrozone Area [high, medium, and low water use areas] (square feet)***
SLA = ***Special Landscape Area (square feet)***
0.62 = ***Conversion Factor (to gallons per square foot)***
IE = ***Irrigation Efficiency (minimum 0.71)***

Hydrozone Table for Calculating ETWU

Please complete the hydrozone table(s). Use as many tables as necessary.

Hydrozone	Plant Water Use Type(s)	Plant Factor (PF)	Area (HA) (square feet)	PF x HA (square feet)
			Sum	
	SLA			

Estimated Total Water Use = _____ gallons

Show calculations.

DAVID GUSTAVSON, Public Works Director
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CERTIFICATE OF COMPLETION

This certificate is filled out by the project applicant upon completion of the landscape project.

PART 1. PROJECT INFORMATION SHEET

Date		
Project Name		
Name of Project Applicant	Telephone	
	Fax	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Project Address and Location:

Street Address		Parcel, Tract or Lot Number (if available)
City		Latitude/Longitude (optional)
State	Zip Code	

Property Owner or his/her designee:

Name	Telephone	
	Fax	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

Property Owner

"I/we certify that I/we have received copies of all the documents within the Landscape Documentation Package and the Certificate of Completion and that it is our responsibility to see that the project is maintained in accordance with the Landscape and Irrigation Maintenance Schedule."

_____ _____

Property Owner Signature Date

Please answer the below questions:

1. Date the Landscape Documentation Package was submitted to the local agency _____/_____/_____
2. Date the Landscape Documentation Package was approved by the local agency _____/_____/_____
3. Date that a copy of the Water Efficient Landscape Worksheet (including the Water Budget Calculation) was submitted to the local water purveyor _____/_____/_____

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PART 2. CERTIFICATION OF INSTALLATION ACCORDING TO THE LANDSCAPE DOCUMENTATION PACKAGE

"I/we certify that based upon periodic site observations, the work has been substantially completed in accordance with the ordinance and that the landscape planting and irrigation installation conform to the criteria and specifications of the approved Landscape Documentation Package."

Signature*	Date	
Name (print)	Telephone	
	Fax	
Name of Project Applicant	Email Address	
License No. or Certification No.		
Company	Street Address	
City	State	Zip Code

*Signer of the landscape design plan, signer of the irrigation plan or a licensed landscape contractor.

PART 3. IRRIGATION SCHEDULING

Attach parameters for setting the irrigation schedule on controller per ordinance Section 492.10.

PART 4. SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE

Attach schedule of Landscape and Irrigation Maintenance per ordinance Section 492.11.

PART 5. LANDSCAPE IRRIGATION AUDIT REPORT

Attach Landscape Irrigation Audit Report per ordinance Section 492.12.

PART 6. SOIL MANAGEMENT REPORT

Attach soil analysis report, if not previously submitted with the Landscape Documentation Package per ordinance Section 492.5.

Attach documentation verifying implementation of recommendations from soil analysis report per ordinance Section 492.5.

Affix Seal Here